

Odor and Nutrient Management

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Sample Soil and Plan Now for Fall Manure Management That Includes the P Index

by Jeremy Klatt, Iowa Department of Natural Resources

Producers looking forward to having the phosphorus (P) index included in their manure management plan (MMP) may want to conduct soil tests this spring. For those who submitted an original (new) MMP to the DNR between April 1, 2002, and Oct. 25, 2004, the P index will be required as part of their first annual MMP update after Aug. 25 this year. If an MMP was submitted prior to April 1, 2002, the P Index will be due with the first update after Aug. 25, 2008.

Testing soil now will allow producers to consider factors such as soil P, erosion and location of the field to estimate the risk of P delivery to surface waters. Producers can control some of these factors by using conservation practices that reduce the risk or find additional manure application fields, if necessary.

Either way, it's to the producer's advantage to take soil tests now that meet DNR requirements and plan ahead. The samples taken for the P Index also can be used for making nutrient and lime recommendations. The following minimum requirements for soil testing must be met to meet state law requirements:

Sampling Method

Soil samples can be taken according to any credible sampling method. For instance, grid sampling, sampling by soil type or elevation, or sampling by designated management zones within a field. Two good sources of soil sampling information are: Iowa State University Extension publication *Take a good soil sample to help make good decisions* (PM 287) available on-line at: www.extension.iastate.edu/Publications/PM287.pdf and NCR-13 Report 348 *Soil Sampling for Variable-Rate Fertilizer and Lime Application* available on-line at: www.extension.umn.edu/distribution/cropsystems/DC7647.html

Minimum Sampling Requirements

Regardless of which sampling method is used, there are minimum requirements that must be met.

- Samples must be analyzed for P and pH once every four years (the P Index and the MMP must be updated with the new soil samples every four years)
- Each soil sample can represent no more than 10 acres. For fields 15 acres or less, only one sample is necessary.
- Each sample must be a composite of 10 cores taken at the depth of 0-6 inches.

Using Existing Soil Samples

Soil samples can be used for the plan if they are four years old or less and meet the above requirements. Therefore, producers who need to submit a P Index MMP update in two or four years could plan ahead and begin thinking about soil sampling.

For producers who must submit an original MMP, existing soil samples that do not meet the above requirements can be used for the original MMP, if they are four years old or less. In this case, soil samples that do meet the requirements must be taken no more than one year after the MMP is approved.

Use Phosphorus-Based Rates to Reduce Soil-Sampling Requirements

Initial samples must be taken at one sample per 10 acres for all fields. One way to reduce the soil sampling requirements associated with the MMP is to apply manure at P-based rates. If P-based application rates are used between soil sampling periods, soil sampling can be reduced to one sample per 20 acres for fields with a Very Low, Low or Medium P Index.

A P-based application rate replaces the P that is removed from the field with harvest or is based on a P soil test recommendation. Because up to four years of P removal can be applied in a single application (if the N requirement of the crop is not exceeded), P-based application rates may not be much different than N-based rates.

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(Sample Soil continued)

When developing a P-based manure plan, not applying to the same fields every year is often more important than the actual application rate.

Reducing the P concentration of the manure (e.g. with phytase) also will make a P-based manure plan more achievable.

Soil Laboratory Analysis

Soil samples must be analyzed by a lab enrolled in the Iowa Department of Agriculture and Land Stewardship soil testing certification program. For a list of soil sampling labs enrolled in this program please call (515) 725-1478.

The Bray P_1 soil test method should not be used if the pH of the soil is greater than 7.4, as this test does not provide an accurate measurement of available soil P under these conditions. If the Bray P_1 test is used and the pH is greater than 7.4 in one or two samples in a field, do not include these samples in the field average for the P Index. If the majority of samples have a pH greater than 7.4, use the Olsen or Mehlich-3 soil test when samples are taken again. If you know from past sampling that areas of a field have a pH greater than 7.4, or are unsure of the field's pH, request the Olsen or Mehlich-3 P soil test method for all soil samples.

For more information, Iowa State University has a soil fertility Web site that includes information about soil sampling at <http://extension.agron.iastate.edu/soilfertility/>.

If you have questions about the requirements contact your regional Iowa DNR field office.

Manchester (563) 927-2640

Mason City (641) 424-4073

Spencer (712) 262-4177

Atlantic (712) 243-1934

Des Moines (515) 725-0268

Washington (319) 653-2135

Technical Service Provider Re-Certification Process

by Judy Martinson, Iowa USDA-NRCS

The 2002 Farm Bill provided USDA with the opportunity to use Technical Service Providers (TSP) to perform conservation work on private lands. The public's interest in conservation work, and the government's financial commitment to put more conservation on the ground, is at historic levels. The TSP Initiative provided the direction for building a new industry of certified professionals committed to providing quality technical assistance to producers.

The Technical Service Provider Initiative is now three years old and those who first certified as TSPs are now eligible for re-certification. There have been a number of changes in the certification process since the initial applicants were certified. Re-certifying TSPs need to be aware of these changes if they are to recertify in a timely manner. Re-certifying TSPs are expected to meet the same criteria as newly certifying TSPs. They also will need to ensure that all the application is completed prior to submitting the application. In most cases, the application will not be accepted if the information is incomplete.

The *TSP Certification Categories, Options, and Criteria* have changed, both in the scope of criteria that must be met to certify in a category and, in some cases, the category a TSP certified in may have changed name. Many categories now require specific training prior to certification. The biggest change is that all TSP applications are now verified by a TSP Coordinator. In Iowa, applicants are requested to fax copies of all training certificates and licenses to the TSP Coordinator upon submission of the application.



Another change is that all TSPs must have email addresses and submit their applications via the Internet.

See the online version of this newsletter for a list of frequently asked questions at <http://www.extension.iastate.edu/Pages/communications/EPC/>. If you have further questions about the TSP recertification process and you are a TSP certified in Iowa, contact Judy Martinson at (515) 323-2229 or at judy.martinson@ia.usda.gov. Out-of-state TSPs may access the contact information for your state TSP Coordinator at <http://techreg.usda.gov>.

Update on Low-Interest Loans for Animal Feeding Operations

by Patti Cale-Finnegan, Iowa Department of Natural Resources; and Jeff Ward, Iowa Agricultural Development Authority

Producers have received their first loans from a low-interest financing program that can help animal feeding operations upgrade their manure management facilities. The Livestock Water Quality Facilities Program, operated by the Iowa Agricultural Development Authority, has either closed loans or is processing loans for several types of facilities.

The Iowa Agricultural Development Authority approved loans recently for the following projects:

- Building a dry litter compost building for turkey litter in north central Iowa. Maintaining nutrient value in the litter will have an economic benefit when the litter is sold.

- Adding a lagoon and a sand separator to separate solids sand for a dairy that uses sand bedding in northwest Iowa. By reusing the sand, the producer will reduce costs and reduce land application from a daily occurrence to twice per year.
- Purchasing a skid loader and manure tank.

The loan program can be used by animal feeding operations with less than 1,000 animal unit capacity which do not require an operating permit from the Department of Natural Resources.

Producers will find the program less restrictive after rule changes currently underway are completed. In previous rules, the program required that producers either have a Comprehensive Nutrient Management Plan (CNMP), or develop one as part of the loan. Those rules have been revised to require a manure management plan approved by the Department of Natural Resources. At the time this article was written, the proposed changes were going through the administrative rules review process and were expected to be effective in mid-April.

Producers also can expect the eligibility date to be eliminated. Previously, operations built after Dec. 31, 2001, were not eligible to borrow through the program. The new rules proposal takes out that date, and allows more recently constructed operations to apply. The program will still not be available for construction of new animal feeding operations.

Interested applicants may contact: Jeff Ward, Executive Director, IADA, 505 5th Ave, Ste 327, Des Moines, Iowa 50309, (515) 281-6444; email to iada@iada.state.ia.us or on the Web at www.iada.state.ia.us.





How to Certify as a Technical Service Provider in Certified Nutrient Management Planning

by Judy Martinson, Iowa USDA-NRCS

One of the most common misconceptions in the Technical Service Provider (TSP) certification process is that all certification categories are equal. An excellent example of this is found in the certification process for development of a Certified Nutrient Management Plan (CNMP). Producers who have conservation program contracts in the Environmental Quality Incentives Program (EQIP) quite often have a requirement the producer to have a CNMP for their farming operation. Many TSPs, and more than a few producers, believe that all certification categories for Nutrient Management and Manure and Waste Management are equal. Nothing could be further from the truth.

The Technical Service Categories and Criteria Options for Certification found on the TechReg home page (<http://techreg.usda.gov>) will provide the potential TSP with each category requirements. In most cases, the text is very specific as to what criteria needs to be fulfilled for certification in a specific category. This is not true in the CNMP categories. The qualifications are somewhat hidden within the text. For example, when the criteria calls for the applicant to be “familiar with the National Planning Procedures Handbook Part 600.5”, the applicant is expected to read the document.

The same is true for the requirement that “the applicant (or applicant’s training course) meet the standards found in the NRCS General Manual Title180, Part 409.10”

These sections provide the required training and give the applicant formatting information for writing a CNMP. These documents can be found in the National Planning Procedures Handbook Part 600.5 (http://www.nrcs.usda.gov/programs/afo/cnmp_guide_600.50.html) and the NRCS General Manual Title180, Part 409.10 (http://policy.nrcs.usda.gov/scripts/lpsiis.dll/GM/GM_180_409_10.htm).



The online version of this newsletter includes a list of frequently asked questions about certification in CNMP categories at <http://www.extension.iastate.edu/Pages/communications/EPC/>. If you have further questions about the TSP recertification process and you are a TSP certified in Iowa, contact Judy Martinson at (515) 323-2229 or at judy.martinson@ia.usda.gov. Out-of-state TSPs may access the contact information for your state TSP Coordinator at <http://techreg.usda.gov>.

Adapting a CAFOs NMP for Today’s Nutrient Challenges

by Rick Koelsch, University of Nebraska

The principles for Comprehensive Nutrient Management Plans (CNMP) were first released almost six years ago. The framework for a National Pollutant Discharge Elimination System (NPDES) Nutrient Management Plan (NMP) was released three years ago. Our understanding of the nutrient related issues has expanded during that time. However, are CNMPs and NMPs adapting to our new knowledge?

Some changes in our understanding of these issues include:

- USDA ERS studies have suggested that most CAFOs have insufficient land for managing nitrogen and practically all CAFOs are short of land for managing phosphorus. This suggests that management plans based upon recycling manure more efficiently within the boundaries of the farm’s property may be only a partial solution.
- Feed is the primary source of nitrogen and phosphorus entering most CAFOs. Commercial fertilizer is often a distant second (see Figure 1). Our cropping systems targeted nutrient plans have no impact on feed inputs. Are our nutrient plans ignoring the “800 pound gorilla” on our animal feeding operations?
- The degree to which best management practices are implemented gives us little insight into the nutrient performance or efficiency of individual CAFOs. Our nutrient plans typically provide little insight as a “yardstick” for measuring nutrient performance.
- EPA has the power to regulate ammonia emissions from livestock operations. In addition, ammonia volatilization may not be the benign nutrient loss we have historically assumed it to be.

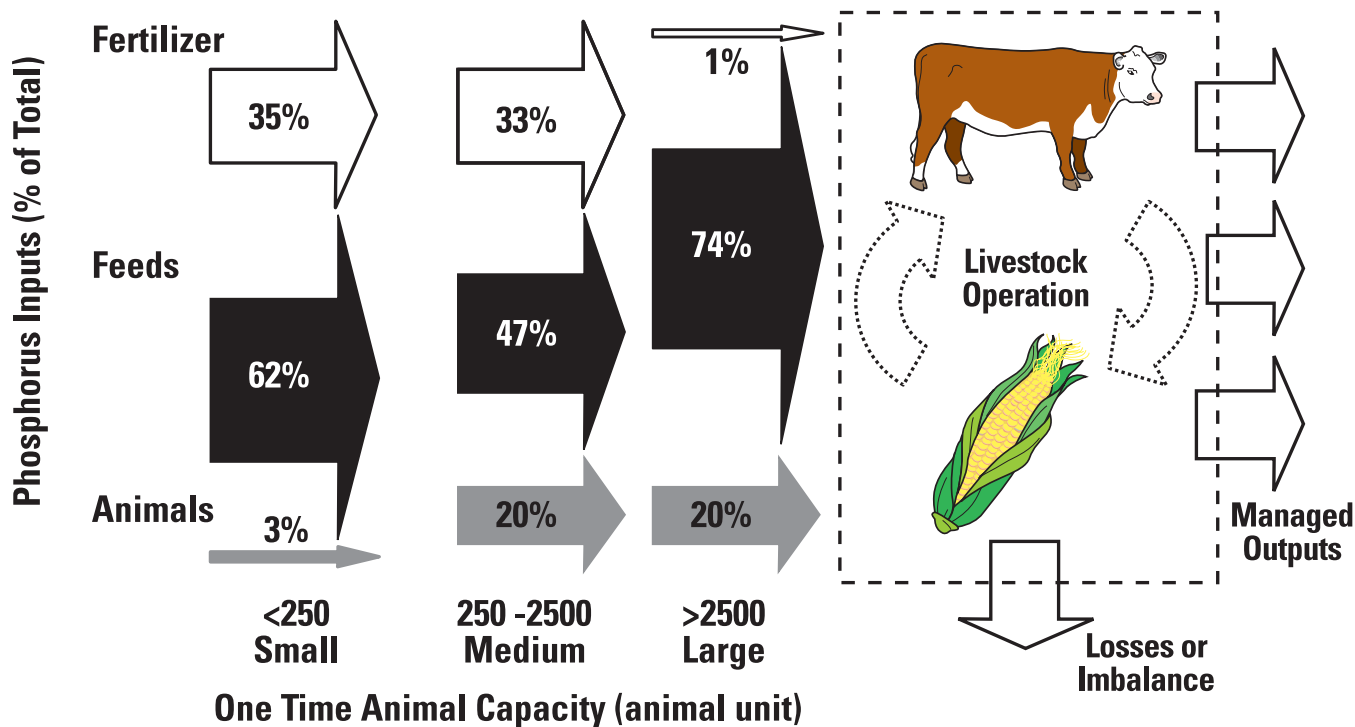


Figure 1. Source of phosphorus inputs to 33 Nebraska confined swine and beef cattle operations.

Do our CNMPs and NMPs need to adapt to our changing knowledge of nutrient issues? Our current public policy targets efficient recycling of manure nutrients within the boundaries of the CAFO's property. While this approach is a first step toward achieving animal feeding operations that are sustainable, it may not be the final solution for most CAFOs.

An open discussion is needed to identify how our planning processes must evolve to solve the nutrient challenges on livestock and poultry operations. I propose that the following potential changes should be a part of that discussion:

- **Should a nutrient plan include an estimate of a farm's ammonia emissions?** Rates above 100 lbs per day are reported by most industries to EPA. A nutrient plan that provides an estimate of ammonia emissions would be an important first step to creating an awareness of the animal industry's ammonia emissions.
- **Should a nutrient plan estimate the quantity of excess manure nutrients that can not be managed within the boundaries of the CAFO?** We must recognize that animal feeding operations that purchase significant quantities of their feed from off-farm sources must also export significant quantities of

manure. A nutrient plan that estimates the magnitude of those excess manure nutrients is an important initial step toward sustainability.

- **Should a nutrient plan include an animal nutritionist's review of the potential for reducing feed nutrient purchases?** The CNMP has included a feed management component but it has been largely ignored and little or no effort made to involve professionals competent in animal nutrition.
- **Should a nutrient plan include a calculation of the dollar value of manure and/or a manure marketing plan?** If we want to change manure management practices, demonstrating an economic value is a much more powerful message than demonstrating an environmental value. Our manure marketing workshops this past summer consistently demonstrated manure values in excess of a \$100 per acre for feedlot manure. A nutrient plan that demonstrates the dollar value of manure may be more readily implemented.
- **Should a nutrient plan include an expectation for documenting environmental performance?** Over the years, many have made excuses as to why it can't be done. But we have never invested similar energy in how it might be done. I believe it is time to have the later discussion.

(continued on page 6)



(Adapting an CAFOs NMP continued)

At the Heartland Water Quality Conference for extension educators, we heard about an Iowa water-shed that bases incentive payments on common field measurements of performance (P Index and stalk nitrate tests). These measures provide one example for measuring “individual field” nutrient performance.

The Dutch have used the MINAS (mineral accounting system) for measuring farm level inputs and outputs to measure “whole farm” nutrient performance since the early 1990’s. An evaluation of this approach with 33 Nebraska farmers in 1997 provided a very clear differentiation between those farms achieving nutrient sustainability and those with significant challenges (Figure 2). There is no doubt that we have the tools and capability to measure performance today. The doubt that remains might be related to our desire to know the answer.

Our understanding of nutrient issues for animal feeding operations is changing. Our nutrient planning processes must adapt to emerging nutrient issues and to our improved understanding of the underlying causes of nutrient accumulations and losses from some animal feeding operations. Future nutrient planning processes

may need to recognize the critical role of feed nutrient inputs, the situations when manure nutrients must be exported, the emerging importance of ammonia-N emissions management, and the value of measuring nutrient performance. Our integration of these topics into nutrient plans will make a critical contribution to improving environmental stewardship in animal agriculture.

This article first appeared in the *Heartland Regional Water Quality Initiative Coordination Newsletter* and is reprinted with permission of the author.

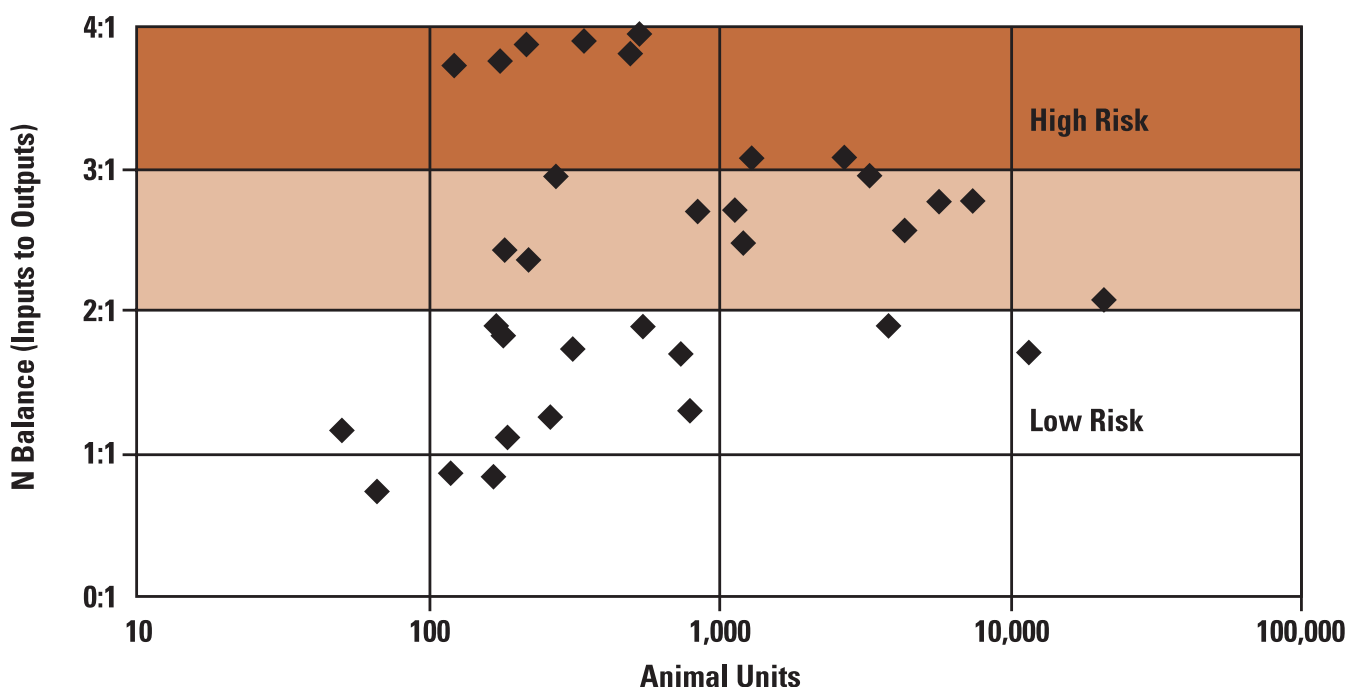


Figure 2. Whole farm nutrient balance (ratio of inputs to managed outputs) for 33 Nebraska swine and beef facilities.



Manure Matters Odor and Nutrient Management Newsletter Survey Results

by Rachel Klein, Iowa State University

A survey was included in the 2005 Winter Issue of the ONM Newsletter. It was developed to identify the readers and their manure and air quality management practices. The survey asked questions pertaining to manure management, feed management, nutrient practices and odor control, and any changes the readers had made in management practices as a result of information they found in the ONM. The survey included 12 management questions and one overall opinion question for the readers. The results are as follows:

The first section of the survey dealt with how the reader rated the newsletter itself;

- 65% said the newsletter had timely information,
- 78% said the information was useful,
- 73% said the text was easy to read, and
- 44% said the information improved their ability to make management decisions.

The primary occupations were as follows:

- 65% farmers,
- 9% commercial manure applicators,
- 4% research/extension specialist/county extension employees,
- 4% NRCS employees, and
- 4% farm managers.
- There were also 13% who listed other: graduate student, IDNR, and state government employee.

The survey asked: “Does the Odor and Nutrient Management newsletter contain information not available to you elsewhere?”

- 74% said yes, and
- 26% said no.

The next set of questions dealt with management issues. “Did you change any fertility management practices, manure management practices, or employ odor control technologies as a result from the information found in ONM?”

- 13% changed their odor management,
- 22% changed their manure application rates as well as application technology and nutrient management practices,

- 4% implemented regulatory requirements,
- 17% substituted manure for commercial fertilizer, and
- 9% said it was not applicable to them.

The dollar amount of estimated value of savings or profit made because of these changes ranged from \$500 to \$4,000.

The survey asked: “Do you use some type of feeding management practice to reduce nutrients excreted in manure?”

- 39% are feeding phytase to reduce dietary total phosphorus content,
- 30% are phase-feeding,
- 35% are split-sex feeding,
- 9% are feeding synthetic amino acids to reduce dietary crude protein,
- 4% are following NRC dietary requirements,
- 13% said it was not applicable to them,
- 0% said they were formulating diets to meet degradable/undegradable ruminant protein requirements.

For those who were livestock producers, the survey asked, “Do you use any of the following practices or strategies to reduce odors or emissions from your livestock facility?”

- 4% listed bio-pit covers,
- 26% use vegetation/landscaping,
- 26% use pit additives,
- 30% use feed management,
- 48% inject/incorporate manure,
- 4% use umbilical cord direct injection, and
- 9% stated it was not applicable to them,
- 0% used synthetic pit covers and biofilters.

The survey also asked: “What type of information do you think would be most beneficial to your operation/business?”

- 35% would like to have air quality best management practices demonstrations,
- 17% would like to have manure equipment calibration demonstrations,
- 13% would like to have open feedlot solids setting demonstrations,
- 30% would like to see alternative technologies for manure use,
- 22% would like to have RUSLE2/P Index workshops,
- 17% would like to learn how to develop a manure management plan,

(survey continued on back page)

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(survey continued)

- 13% would like to have a water quality workshop,
- 22% would like to have Technical Service Provider training session,
- 39% would like to see additional field trial comparisons of manure vs. commercial fertilizer use,
- 9% stated they would like to have other issues, such as updates on DNR rulings and laws, and better explanations of the rules.
- 4% listed not applicable.

The final question asked in the survey was: “What is your preferred method of receiving information?”

The readers could choose from a list and they could choose all that applied to them. The preferred methods of receiving information were as follows:

- 43% having field demonstration/field days/tours,
- 96% receiving newsletters,
- 26% favored receiving e-mails,
- 35% liked receiving fact sheets,
- 22% liked having workshops,
- 35% receiving trade magazines,
- 9% using the web.

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. . . and justice for all

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